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**(54) METHOD FOR  
FORMING SILICON FILM  
AND MANUFACTURE OF  
SOLAR BATTERY**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To manufacture a silicon film on a substrate under the condition where silane is uniformly doped from an inner part to an outer part, by using specified high-order silane formed of a first process to a third process in a liquid form.

**SOLUTION:** A gate bulb 3 is set in an open state and a coating room 1 and a film forming room 2 are vacuum-exhausted. Helium is introduced to the film forming room 2 through a gas supply line 8. High-order silane expressed by  $\text{SiH}_{2n+2}$  or  $\text{Si}_n\text{H}_{2n}$  ( $n$  is the integer of  $3 \leq n \leq 7$ ) is dissolved in the additive of phosphine in a first process. Then,

high-order silane containing the additive is dropped on a glass substrate 9 on a spin coater 4 through a high-order silane supply line 6, and the whole face of the glass substrate 9 is coated lay silane with the rotation of the spin coater 4 in a second process. The temperature of high-order silane containing additive on the glass substrate 9 is raised to 35°C with the temperature inclination of 100°C, the temperature of the substrate is held for thirty minutes and a silicon film having an n-type conduction type is formed.

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